

DOCUMENT RESUME

EF 002 279

ED 023 288

A Realistic Approach to Civil Defense; A Handbook for School Administrators.

American Association of School Administrators, Washington, D.C.; National Education Association, Washington, D.C. Commission on Safety Education.

Pub Date 66

Note -37p.

Available from -Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402 (GPO 218-792 0--66--2, \$020).

EDRS Price MF -\$025 HC Not Available from EDRS.

Descriptors - *Civil Defense, Community Programs, *Fallout Shelters

General concepts as well as specific data related to fallout protection are presented. Community-oriented programs utilizing school facilities are shown to be a realistic means of implementation. Information presented includes--(1) discussion of school and community roles, (2) a scientific explanation of the fallout phenomenon, (3) development of adequate school shelter facilities, (4) organization of emergency programs and procedures, and (5) community education programs. (MH)

**A
REALISTIC
APPROACH
TO
CIVIL
DEFENSE**

ED023288

A HANDBOOK FOR SCHOOL ADMINISTRATORS

EF002279

Wisconsin Board of
Vocational, Technical and Adult Education
Madison, Wisconsin

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE
PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION
POSITION OR POLICY.

A REALISTIC APPROACH TO CIVIL DEFENSE

A HANDBOOK FOR SCHOOL ADMINISTRATORS

Produced by
AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS
and
NATIONAL COMMISSION ON SAFETY EDUCATION
of the
NATIONAL EDUCATION ASSOCIATION
1201 Sixteenth Street NW., Washington, D.C. 20036

In cooperation with the
OFFICE OF CIVIL DEFENSE
DEPARTMENT OF DEFENSE
Washington, D.C. 20310

The Material in This Publication May Be Reproduced

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price 20 cents

FOREWORD

To the School Administrator:

A new and very practical and realistic "package" of school civil defense has come into being as a result of the experience of school administrators and the technical knowledge of the Office of Civil Defense. Based on current knowledge of natural and nuclear disaster conditions, this new school program of administration, protection, and education supplants the old, popular visions of bombproof shelters and mass evacuation. The program is educationally sound and economically feasible. This booklet tells the story.

JAMES A. HAZLETT, *Chairman*
AASA Special Civil Defense
Publication Committee

Members of the AASA Special Civil Defense Publication Committee who guided this project, together with those who served as staff, are:

JOHN C. ALBOHM, Superintendent of Schools, 418 South Washington Street, Alexandria, Va., 22313

HARRY R. DAVIDSON, Superintendent, Battle Creek Public Schools, 73 Capital Avenue NE., Battle Creek, Mich., 49016

HAROLD H. EIBLING, Superintendent of Schools, 270 East State Street, Columbus, Ohio, 43215

HENRY J. FOLKERDS, Superintendent of Schools, 525 East Avenue, Red Wing, Minn., 55066

BRUCE MILLER, Superintendent of Schools, 3954 12th Street, Riverside, Calif., 92501

JAMES A. SENSENBAUGH, State Superintendent of Schools, State Department of Education, 301 West Preston Street, Baltimore, Md., 21201

Representing the Office of Civil Defense

FRED H. BRANTLINGER, Staff Director, Programs Division, Training and Education, Office of Civil Defense, Department of Defense, Pentagon, Washington, D.C., 20310

Staff of American Association of School Administrators

FORREST E. CONNER, Executive Secretary

Staff of NEA Commission on Safety Education

S. A. ABERCROMBIE, Assistant Executive Secretary

NORMAN KEY, Executive Secretary

ARTHUR L. MAHONY, *Project Writer*, Associate in Safety Education

ROBERT L. MARSHALL, Associate Executive Secretary

RAY C. MAUL, Consultant in Safety Education

CONTENTS

	Page
FOREWORD	iii
A REALISTIC APPROACH TO CIVIL DEFENSE—THE CONCEPT OF CIVIL DEFENSE	1
IDENTIFYING A NEED	2
THE NEW APPROACH TO PROTECTION	3
THE SCHOOL—A VITAL LINK IN CIVIL DEFENSE	3
THE ROLE OF THE SCHOOL ADMINISTRATOR IN CIVIL DEFENSE	4
CIVIL DEFENSE—A STUDY IN SCIENCE	5
The Weapon	6
Fallout	6
Fallout Radiation	8
Radioactive Decay	9
Exposure	9
Shielding	9
THE SCHOOL PLANT	11
The Safest Place	11
Improvising	12
BUILDING FOR TOMORROW	14
DEVELOPING A SHELTER SYSTEM	16
THE COMMUNITY SHELTER PLANNING PROGRAM	17
WARNING AND COMMUNICATIONS SYSTEMS	18
The Emergency Voice of the School	19
IN THE SHELTER	20
"Turn on the Lights"	20
"I'm Thirsty"	20
". . . and Hungry"	20
THE INTRASCHOOL SYSTEM ORGANIZATION FOR CIVIL DEFENSE	21
Staff Utilization	24
In-service Civil Defense Education of Staff	24
THE SHELTER DRILL	25
People	27
CIVIL DEFENSE IN THE CURRICULUM	27
THE PARENT IS A POTENTIAL ALLY	28

	Page
CIVIL DEFENSE ADULT EDUCATION	30
THE SCHOOL AS A COMMUNITY AGENCY.	30
". . . their appointed rounds".	31
BIBLIOGRAPHY.	33

A REALISTIC APPROACH TO CIVIL DEFENSE

THE CONCEPT OF CIVIL DEFENSE

Disaster—the word and the reality—is not new to the human race. Fire, flood, hurricane, tornado, earthquake, war—these have been companions of man through all his history. That which over the ages was thought of as “survival” is called “safety” today. Only the *form* of some of the dangers has changed. Whether they strike individuals or masses, the hazards of living are still with us—and can still be modified or controlled by action.

The area of safety which is designed for protection against the effects of major disasters, is called “civil defense.” It is not new. The settlers who built a palisade and a blockhouse to stop hostile arrows and bullets, and perhaps a levee to check the flood, were practicing civil defense. When they guarded against enemy attack and criminal acts, fought fire, organized their communities with local governments to provide the necessary protective services, they were developing *civil defense* as an essential guardian of life, and as an integral part of government and of the community. The concept of civil defense has been basic to civilization and has been part of our society throughout history.

The tornado, the blizzard, the earthquake—these are still with us. They still affect us locally. The community government, with the legal and material support of the State and the Nation, is charged with the alleviation of suffering, saving of lives, and rehabilitation of the people from disaster conditions, whether nature-caused or manmade. Civil defense is not a very occasional assumption of extraordinary power and function by a local government. *It is a part of the governing function in the same way as are police and fire protection.*

Civil defense is not new, but there are some new qualities in it today. First, it exists in a changing world. America's geographic isolation was very comforting and provided great protection both when she became independent and while she grew powerful. But modern communication, transportation, and weaponry, have destroyed that isolation. Americans can no longer sit in the park in front of the bandstand for the turn-of-the-century Sunday afternoon concert, safe from the world and its warmakers, protected by our two-ocean fleet.

Most people have recognized the passing of that era, but the wishful rationalization of security remains. To think of an alternative is disturbing and unpleasant, something we usually avoid doing. We become impatient when we hear of national disaster. Yet we must think and act within the framework of the world as it is today.

Now our protecting fleet of the sixties is the potential power of our retaliatory weapons, impregnable as seen by the one who forgets history. The very word

"retaliatory" should indicate the truth. Deterrent—yes; but impregnable—no. One of the most timely statements ever made in reference to man's efforts to deter an aggressor was made by President John F. Kennedy on May 25, 1961.

He said:

But this deterrent concept assumes rational calculations by rational men. And the history of the 20th century is sufficient to remind us of the possibilities of an irrational attack, a miscalculation, an accidental war or a war of escalation in which the stakes by each side gradually increase to the point of maximum danger which cannot be either foreseen or deterred. It is on this basis that civil defense can be readily justifiable—as insurance for the civilian population in case of an enemy miscalculation. It is insurance we trust will never be needed—but insurance we could never forgive ourselves for foregoing in the event of catastrophe.

While the concept of civil defense is not new, its form is ever evolving. **It Must Change To Meet Change.** The alternative in this, as in many areas of life, including education, would be *obsolescence*. The organization of the Federal level of Civil Defense, in the Department of Defense, assures us that the policies and procedures recommended for the entire CD structure will be in accord with the latest available research data from the related areas of nuclear physics, meteorology, communication, etc. Change is inevitable.

With the advent of the hydrogen bomb and the ICBM (intercontinental ballistic missile) and other delivery systems, the defense structure had to be altered to give maximum protection within its own time.

Too, who can say that nothing has been added to our store of knowledge of protection by the Alaskan earthquake and by other recent natural disasters, or that we should not use what we have learned, even though we must change some of our standard procedures to do so?

IDENTIFYING A NEED

In completing a recent NEA project, personal site-visit interviews were conducted with school administrators throughout the country. One conclusion—expected but nevertheless very important to this publication—pinpointed the area of greatest need for accurate information among our school people. The area is that of pupil protection under conditions of nuclear disaster.

It should be understood that the school civil defense program today includes provision for all kinds of disasters, natural and man made. The magnitude of a nuclear disaster may be equalled or exceeded in importance by the frequency and certainty of the usually fairly localized disturbances of nature. Knowing this, the reader may wonder at the predominance of information herein dealing with nuclear disaster. The reason is this:

In each area of the country where some type of violent disturbance of nature is characteristic, school people and government officials were found to be well versed in the nature of the hazards, and well informed as to appropriate protective action. The tornado, the hurricane, the flood, the earthquake—each is an old, old story in its own haunts. Experience continues to add to knowledge of

these things and, also, the pertinent, available literature of civil defense grows. (Example: *Hurricane Carla*, listed in Bibliography.)

Most school people faced with the probability of indigenous natural disaster—whatever the type—are well acquainted with its characteristics and with appropriate protective actions; however, very few possess accurate, up-to-date information on the nuclear disaster. Too, in the case of the latter, the protective measures are the same in all parts of the country. The basic civil defense nuclear-disaster-oriented measures appropriate to tornado country apply to earthquake or hurricane areas also.

Then, too, prior preparation for nuclear disaster makes available all the essential coordinated governmental and private resources for lesser disasters.

In view of the foregoing rationale, the reader may expect most material herein to be oriented to the newest, least understood phase of civil defense, disaster protection measures for the possible nuclear war.

This should not be interpreted as downgrading the importance of the older, better known forms of disaster protection, nor as a denial of the coexistence of all kinds of disaster protection in the modern concept of civil defense. This is merely the classic procedure of diagnosing a current pathology, and then instituting the treatment specifically appropriate to it.

THE NEW APPROACH TO PROTECTION

It is important that people recognize the real design of civil defense in the 1960's. Some of its basic characteristics that all should know are these:

1. It is not the national policy to build great bomb shelters and "go underground" should we ever be attacked with nuclear weapons, an idea still widely believed by the uninformed.

2. It is recognized that physical protection against nuclear disaster has much in common with physical protection against natural disasters. The common denominators of both types of emergencies and of the protective measures pertinent to each make a common disaster protection plan (with appropriate variations, of course) highly desirable. Today's civil defense—although centered on saving lives in a time of nuclear attack—encompasses all types of disasters in its planning.

3. In the event of nuclear war the major threat to people in by far the greatest land areas of the country would be radioactive fallout from nuclear explosions. Civil defense today is a practical, *fallout-shelter-centered program*.

4. The program is realistic—well within the resources of the Nation, the State, the community—and of the school. No one is expected to sacrifice vital services to pay for civil defense.

THE SCHOOL—A VITAL LINK IN CIVIL DEFENSE

There are more than 47 million children and nearly 3 million employees in the public and nonpublic elementary and secondary schools of the Nation. The institution which is morally and legally charged with the physical safety of so

many of our people during much of their daylight hours, including the very young who need a great deal of care, is a very critical factor in the Nation's ability to protect its people in times of disaster, natural or manmade.

The parent who sends a child to school has every right to expect that the school will provide a plan for physical protection for that child. The responsibility for this planned protection rests clearly with the school administrator and the board of education, though some duties concerned with its implementation may, of course, be delegated to members of the school staff. No administrator, school board member, Government official, or other person can abrogate this responsibility.

Schoolmen know this, and need but to be shown how civil defense is *actually a major facet of the school's basic safety program* and how an effective CD program can be organized.

THE ROLE OF THE SCHOOL ADMINISTRATOR IN CIVIL DEFENSE

The schoolman accepts without any official directive or notification, the principle that the school carries the responsibilities of a parent during the time the child is in its care. The physical protection of life and limb is obviously within that responsibility.

Less obvious is the "how" of that protection when the nature of the danger to the child is not perfectly definable, and when the pertinent protective procedures are new to American life and to most school people, parents, and the general public.

School safety, as it is concerned with the traditional hazards of the school environment, has developed and refined its methods and instruments over the years, and has been accepted as an integral function of school operation. The school's role in protection of its charges when disaster strikes, however, is less understood—and therefore less well accepted. More than a superficial understanding is essential if the child is to be protected.

A systematic approach to the attainment of this extremely important goal would combine known principles of school operation with the experience-gained knowledge of school administrators who have "been through the mill" of disaster protection organization. The following is an eight-step process for establishment of a civil defense program in a school system, based chiefly upon recommendations from such administrators:

1. The school administrator should learn the nature of the *current* nationwide civil defense program, and the rationale behind it.
2. He should obtain full information on existing State legislation and regulations pertinent to school civil defense in his State.
3. It is highly desirable that he explain 1 and 2 to the board of education, indicating the general nature of a school program which would be appropriate to local conditions. (This would consider the kinds of natural disasters characteristic of the local area, so as to combine in the protection

- program features appropriate to both manmade and natural disasters.)
4. The administrator should request that a statement of board policy be adopted authorizing a civil defense program in the schools of the district.
 5. The next step would be to meet with the local civil defense director (if there is none at local level, then the appropriate county or State official). A description of the community civil defense plan should be obtained and studied, and the manner of fitting the school plan into the community plan determined.
 6. It is most practical for the administrator (with whatever technical and staff assistance he feels it advisable to use) to form the basic school civil defense plan. This plan calls for assignment of personnel, procedural plans and rules, movement and placement of pupils, etc. Determination of these things should remain within the province of the individual responsible for the lives at stake. Expert advice and counsel are not ruled out, of course. (Characteristics of an appropriate plan are cited herein.)
 7. The school civil defense plan should be approved by the board of education.
 8. A School Civil Defense Advisory Committee can be a strong ally and a considerable asset to the program. The composition of this body, the timing of the appointments to it, and its activation are best determined by the man-at-the-scene, the school administrator. While an individual committee member's known personal characteristics and interests are more important than his vocation and avocation, it has been found of great advantage to involve parent-teacher organizations in school civil defense. Some have been represented on the advisory committees. Many PTA's have maintained civil defense committees within their own associations.

In a nationwide survey of the status of civil defense in the public schools, administrators cited the school CD committees and the PTA committees as being very effective in creating and maintaining in the community a climate highly favorable to the program.

In some school districts trips were arranged for committee members to pertinent military and civil defense installations where physical evidence can be seen of the Federal Government's recognition that the possibility of nuclear war exists—that it cannot be (comfortably) relegated to the make-believe world of science fiction.

CIVIL DEFENSE—A STUDY IN SCIENCE

No nation, now or in the foreseeable future, has the capability of making the whole United States ground zero.¹ What of the millions of people who would be out of range of the deadly blasts? Shall we just write them off?

If we don't take well-planned, intelligent action, that is exactly what we would be doing, for it is likely that great numbers of them would die of the effects of radioactive fallout, slowly, distressfully—and completely unnecessarily.

¹ *Ground zero* is the point at or directly beneath a nuclear explosion.

The Weapon

What is the real truth about *the bomb*—to use the popular term. To begin, we must accept the premise that at least one nation possesses the capability to deliver a major nuclear device within the continental United States. How many, to what targets, and how accurately, is less clear, but there is no doubt of the existence of the delivery capability. Granting this, what would then follow in the event of nuclear attack?

First, let us think of the explosion itself. Where each weapon bursts, the typical fireball—with cloud, light and heat, blast and shock—would be accompanied by effects any imaginative person can well visualize. Depending on the intensity of the blast, on the distance from ground zero, and possibly on some protective features of intervening terrain, varying amounts of personnel and property losses would occur within a radius of some miles.

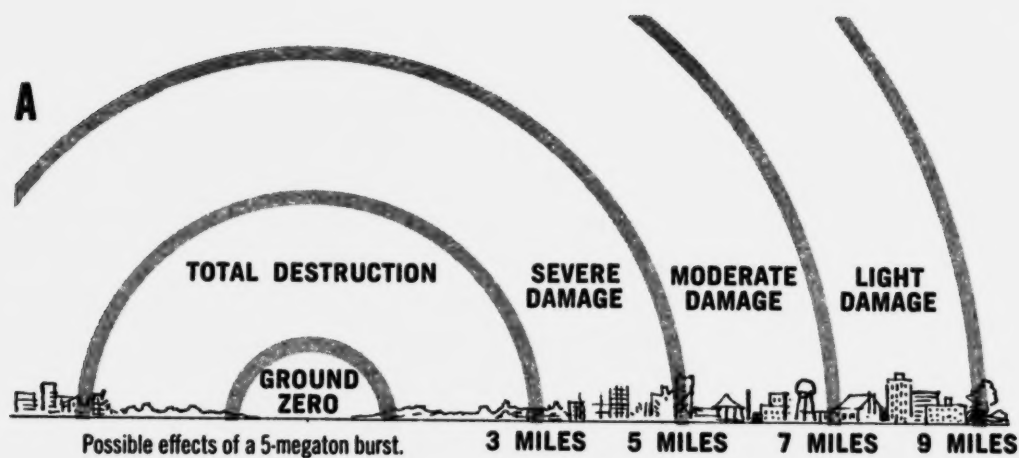
A nuclear explosion which releases the same amount of energy as approximately 1 million tons of TNT is termed a 1-megaton burst. Compare this with the weapon used on Hiroshima. The latter was of the 20-kiloton "A-bomb" class, equal in energy released to approximately 20,000 tons of TNT. Now consider the range of damage of a 5-megaton ground burst, 250 times as powerful as that which struck Hiroshima.

Within a radius of 3 miles from ground zero, we may consider the effects as near total destruction to persons and property. From 3 to 5 miles, damage would be severe; from 5 to 7 miles, moderate; and from 7 to 9 miles, light. At 10 miles and beyond, windows might be shattered and other minor damage done. But the damage even at this distance would be far from the total destruction usually associated with nuclear war.

Now we're thinking about a 10-mile circle around a nuclear explosion 250 times as powerful as that at Hiroshima—and human life going on even within that area. How many perfectly spaced major nuclear bursts would be necessary to accomplish the total destruction of the 3-mile radius areas—or even to extend the 5-mile "severe damage" areas—over the entire United States? We may state with assurance that, while specially placed blasts could kill great numbers of people, the total extent of the nuclear-blast torn areas possible for an enemy to achieve is, under present circumstances, but a very small fraction of the land area of the United States.

Fallout

The foregoing data point out clearly that nuclear blast damage has rigid, and comparatively small, geographic limits. Would the millions of people who are beyond those limits die of radiation sickness? *This is a key war-survival question of our age.* The answer is firm and vital. People will not die of radiation sickness if they have adequate shelter for a sufficient, and probably short, period of time. And the word "shelter" does not refer to a concrete bunker or a dugout! This is the heart of the message that education must carry to the people of the Nation.



B In a hypothetical attack striking about 150 target areas of the United States, the TOTAL estimated (scattered) blast-effect as shown in A would cover only a very small proportion of the more than 3½ million square-mile land area of the United States—something like 1 percent of it.



C



However, assuming an attack with over 3,000 megatons exploded on or near enough to the ground to generate fallout, it would be possible for the fallout to cover all, or nearly all, of the 3,566,599 square miles of continental United States. The pattern shown in C is hypothetical, with many variations possible due to wind, weather, locations of hits, etc. (No area is free from the threat of radioactive fallout.)

It should be kept in mind that the comparison can be but a very rough approximation, drawn to give visible evidence of the very small total of the blast-affected areas as compared with the vast possible coverage of the radioactive fallout.

Figure 1

Radioactive fallout is the major threat to most areas of a large country under nuclear attack. It is unrealistic today for a person to assume that he, personally, would be a blast victim, to be instantaneously destroyed in a nuclear attack because he lives near some place he assumes would be a prime target. This expression of fatalistic resignation is often heard. Its sincerity is open to question. Its basis of known fact is negligible. It is extremely probable, however, that in the event of nuclear attack this person would be exposed to radioactive fallout.

When a nuclear device is exploded in the air so high above land or water that the fireball does not touch the surface of the earth, it is called an *air burst*. The air burst of a nuclear device releases very small radioactive particles which scatter widely in high altitude air currents, over a considerable time—months to years. When they drift down to earth they are widely distributed and do not constitute a serious radiation danger.

A *surface burst*, however, raises material from the earth, to which fission products attach themselves, and distributes it in the form of radioactive particles, called *fallout*. These particles are carried by the wind and settle back to earth locally and for many miles. This is called *early fallout* and it settles to earth during the first day after the explosion, endangering the residents of those areas on which it falls. The area of most severe fallout is, depending on the wind, near the explosion, especially downwind. Depending on the bomb yield, wind, weather, and other factors, the area of severe local fallout might extend 5 miles or more upwind and 200 or more miles downwind. The intensity of fallout would not necessarily be uniform throughout the local fallout area, and a lighter fallout might extend still farther outward from ground zero.

Fallout Radiation

Not all possible ramifications of the radiation hazards of future nuclear weapons are known. With the advent of new devices, new information must be learned. However, much is known about present weapons, and the knowledge is applied in development of civil defense policies and procedures to provide the maximum protection possible to those who would be exposed to disaster conditions. The chronic objector who would do away with the civil defense program because it cannot guarantee him safety is extremely unrealistic. He cannot be guaranteed safety in crossing a street intersection, nor perfect police protection in walking home at night. The intelligent person knows this, but does not recommend abandoning traffic safety or the police. The civil defense program has been developed in light of the most reliable data in existence today.

Radiation is emitted from fallout particles. The air through which fallout passes and the surfaces on which it settles do not themselves become radioactive. It is the radiation originating from these particles that constitutes the hazard to living things. Of the three types of radiation associated with fallout material, gamma is considered to be the most hazardous. Alpha and beta radiation are not major hazards, and are relatively easy to shield against. However, protection from gamma rays requires considerable amounts of dense materials or distance between persons and the radiation source in order to prevent radiation damage.

This can be done, using facilities now existing, with only comparatively minor improvements where needed, and by simply making intelligent plans and preparations.

Radioactive Decay

The sensational picture of a world permanently contaminated and unable to support human life is a very dramatic setting for fiction, but it isn't true in terms of physical science. *Time* is on the side of man's survival.

The radioactive isotopes formed as a result of detonation of a nuclear weapon, carried by the wind as fallout, lose their capacity for radiation at a rapid rate. This is called radioactive decay. Experimentation has shown that the rate of radioactive decay of the fallout from the explosion of a nuclear weapon can be estimated by the so-called "7 to 10 rule." For each multiple of 7 in terms of time, the radiation rate drops to one-tenth of its former intensity. For example, if survey meters (stocked by the Federal Government in licensed shelters) showed 100 roentgens per hour (100 r/hr) at peak radiation, perhaps 1 hour after the nuclear explosion, 7 hours later the meters would register only about 10 r/hr, and 49 hours later only 1 r/hr.

Exposure

Radiation sickness may be severe or mild, depending on exposure. It is not contagious. Neither is it a quick, easy, clean, aesthetic process, conducive to philosophical acceptance by the victim—and it would certainly not be that to the unnecessary victim.

Both the intensity of the radiation and the period of exposure are factors in determining its effects. Beta burns can result under certain circumstances from significant amounts of fallout remaining in direct contact with the skin, but either shielding body surfaces from the particles or removing fallout particles before damage occurs is a fairly simple preventive measure. Gamma radiation, however, affects people for some distance from the fallout itself. The severity of its effects on individuals exposed to a given dose will vary widely. However, we may refer to Figure 2 for some indication of short-term effects on humans of external gamma exposures of less than four days.

The point to be remembered is that exposure to radiation which emanates from radioactive fallout can cause sickness and death, but that such exposure is not inevitable, even in the event of nuclear war. Man can protect himself against it.

Shielding

Gamma radiation has the ability to penetrate mass but this is limited by the density of the mass. The more dense the mass, the less the penetration. A basic protective feature then, obviously, is to interpose a substance, preferably one of considerable density, between the radioactive fallout and people.

We now have a simple, basic objective of current civil defense: **Identify for our people the places they may go to be protected from the radiation**

The severity of effects on individuals exposed to the same dose will vary widely. However, this table may be used to estimate short-term effects on humans of external gamma exposures of less than four days.

<u>Short- term dose</u>	<u>Visible effect</u>
50r	No visible effects.
75-100r	Brief periods of nausea on day of exposure in about 10% of the group.
200r	As many as 50% of this group may experience some of the symptoms of radiation sickness. Although only 5% to 10% may require medical attention, no deaths are expected.
450r	Serious radiation sickness in most members of the group followed by death to about 50% within two to four weeks.
600r	Serious radiation sickness in all members of the group followed by death to almost all members within one to three weeks.

Figure 2

which would emanate from fallout, and make those places available and ready to support life until local conditions permit emergence from shelter. This is the basic principle of the shelter program.

What constitutes *shielding* from the gamma rays? Obviously, the thickness and density of the shielding substance (for example, a wall) are prime considerations. The term used to denote the shielding quality of the walls, roof, etc., of a structure is *protection factor* or PF.

The protection factor is expressed by a number. If the PF within a shelter area is 100, the radiation exposure therein would be one-hundredth of the exposure that would occur if the people were completely unprotected. A PF of 40 means that the radiation exposure inside is one-fortieth of the unprotected exposure.

In addition to *time* (for radioactive decay) and *shielding* from radiation, a third factor to be considered in the pattern of survival is *distance*—distance from the existing fallout, as in being well within the interior or core of a building. Time, distance, and shielding—three allies for survival.

THE SCHOOL PLANT

Before development of a plan of action for civil defense in the school, it is appropriate to analyze the physical environment in which the children live—especially in light of the foregoing data cited under Civil Defense—A Study in Science.

Schoolmen of the geographical areas where tornados, hurricanes, floods, or earthquakes are common occurrences have a practical understanding of the kinds of physical protection appropriate to these types of disaster. Less understood are the features of a building, or an area within a building, which would provide adequate shielding against the radioactive fallout from a nuclear explosion.

In many cases the same shelter areas are appropriate for both kinds of disasters, natural and manmade. Often, the same emergency procedures are also appropriate to both. We might call these “common denominators of civil defense.”

The basic premise for development of a sound rationale for, and understanding of, the modern civil defense program is this: *Every building offers some protection from the radioactive fallout of nuclear explosion.* Knowing this, the conscientious school administrator and school board member will visualize the school protection program as constructed around the theme—translated into policy—“Let us identify and use all the protective features we possess and, further, let us build all we can into the facilities we plan for the future.”

The Safest Place

The safest place concept is the heart of disaster protection, whether for natural or nuclear disaster. Identification of *where* pupils should be placed in time of critical emergency must be made in advance, and must serve as a basic criterion in the development of the total school civil defense plan. This identification of areas is a matter for expert, professional judgment, preferably by architects and engineers specially trained by OCD.

Obviously, the people of the United States are not going to rebuild immediately all the school facilities in the country, in order to incorporate into them disaster protection features. The alternative, with pupil protection at heart, is to make optimum use of the school buildings now in use, while providing for better protection in new construction.

Many school buildings lacking areas with a protection factor of 40 (the minimum required for a licensed public shelter) do have corridors and rooms with PF 20 or PF 30 or PF 10. All buildings offer *some* protection. It is important that the areas in each building having the best degree of protection be known.

Improvising

The school administrator who plans to make optimum use of existing facilities is not limited to a passive acceptance of the *status quo*. Expedient measures may offer opportunities for considerable improvement. Appropriate placement of bookshelves can increase the protection of children in the area affected. Well-placed planter boxes can add to the aesthetic qualities of a building, enhance the view from inside, and be there to serve as effective baffles in the emergency situation.

Where an outside entrance gives direct radiation access at the end of a hallway, plain or ornate baffle walls outside the entrance may transform a very vulnerable hallway into a good, safe shelter area.

Windowless areas in basements, storage rooms, etc., can often be made habitable for emergency use by installation of ventilating apparatus which can be operated under emergency conditions. Under government sponsorship, a package ventilating kit has been developed for the purpose of increasing the capacity of some otherwise suitable fallout shelters.

Installation of additional air ducts to increase the habitability of enclosed areas may make many additional shelter spaces available.

The principle of improvising is not subject to printed rules and specific guidance. Rather, an onsite analysis should be the basis for procedure. It may be helpful to know the comparative protection factors obtainable by placing shielding materials of various kinds between people and areas which would probably be contaminated in event of the presence of radioactive fallout. Figure 3 shows the shielding properties of some common materials.

The safest place and improvising measures are appropriate to provide the greatest security possible within the school facilities we now possess. Schoolmen should know, however, that a survey conducted in 1965 by the NEA Research Division for the NEA National Commission on Safety Education showed a serious and discouraging trend. The question addressed to a representative sample of all school districts in the United States was: "Approximately how many persons can be accommodated in shelters on **School Premises**, not now available but definitely under way or authorized for completion by September 1, 1967?" Of all respondents, 99.1 percent replied, "None!"

RELATIVE PROTECTION OF VARIOUS MATERIALS

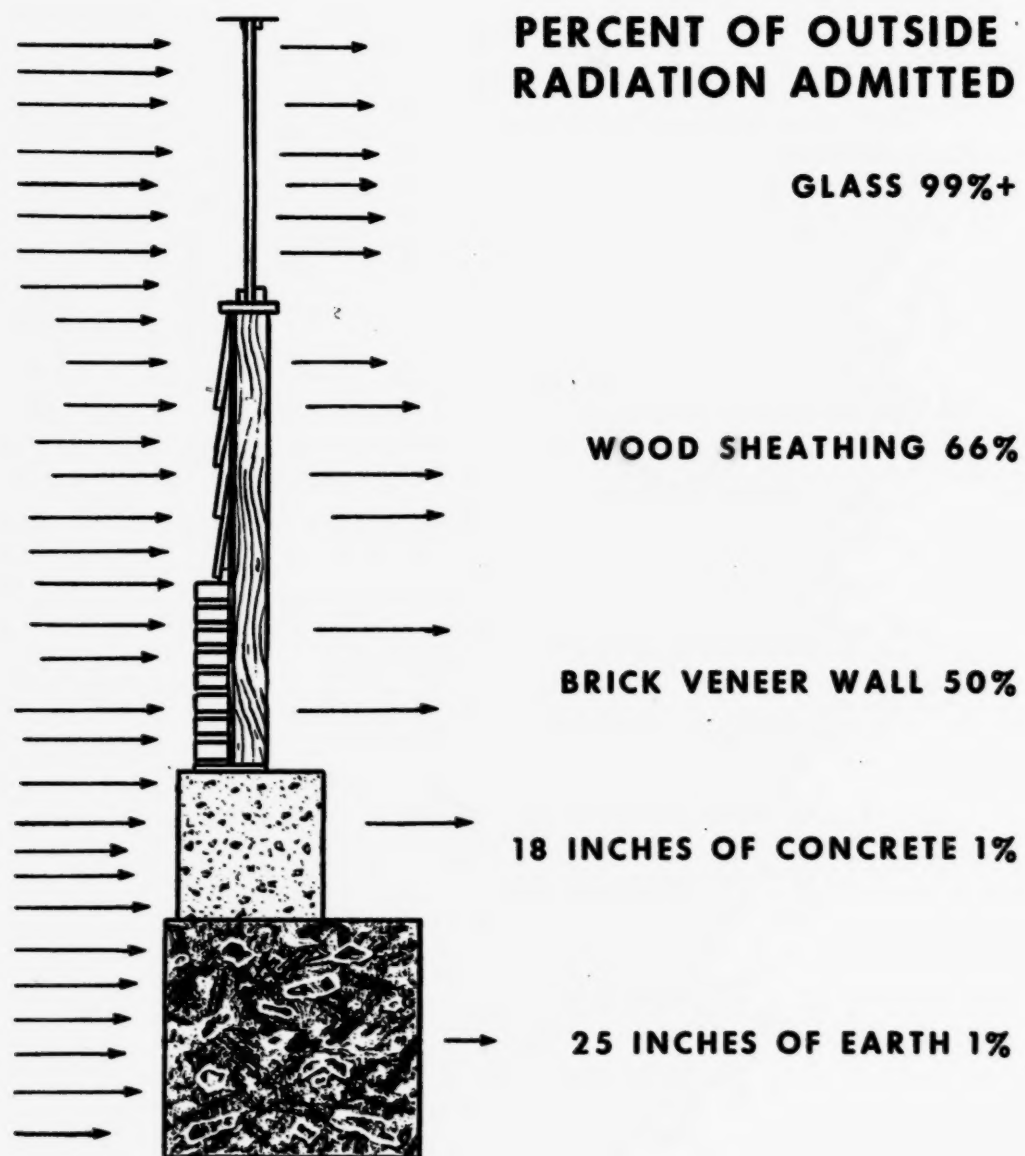


Figure 3

If the shelter spaces we need for our children are only those located by chance in older buildings, if we are neglecting this responsibility in new school construction the style of which tends to omit chance-created shelter areas, and if at the same time our population continues to expand, this security which we owe the children in our schools will vanish, rather than increase. This fact points out very clearly that making use of the existing areas with a degree of protection and improvising expedient measures, as valuable as they are, are not enough alone.

BUILDING FOR TOMORROW

In these days of expanding population and budget-consciousness, there is a tendency toward strong resistance to any new item which would seem to increase cost. In view of this trend, one fact should be made abundantly clear: *properly planned, the incorporation of good shelter features into a school building can be done with little or no additional cost.* (For obvious psychological reasons, this fact should be cited *early* in any initial presentation of the subject.) The point is well illustrated in figure 4.

We must assume that those who authorize the construction of school buildings without regard for disaster protection do so with the best of intentions. However, the only alternative to eventual loss of our protective shelter potential is to *convince* people of the urgent need for that protection. This is part of the task of education.

Figure 4 is based on fact—buildings existing today—not on hypotheses. School buildings have been built, using the construction techniques described. The costs cited are real costs. Compared with the lack of adequate protection in "A", "B" appears much better both in the number of spaces and in the protection factor—*yet there is no difference in cost.* Neither was there any sacrifice of usefulness of the buildings or of their aesthetic qualities.

Then, too, there are many people who want the *best* for their children, and who realize that the proportion of our resources devoted to education is not excessive. If those people know that they could provide additional shelter (fig. 4, col. C), at an additional cost of just 1 or 2 percent, prospects for the future would be much brighter. Those people must be informed.

New construction, then, offers great opportunity for improving the capability of the school to fulfill its responsibility for the physical protection of the child under emergency conditions. Present trends, however, show deterioration rather than improvement. Frankly, the key figure now is the school administrator. Help is available to the school administrator. The Federal Government has established a Professional Development Services program to encourage the creation of additional community fallout shelter space in projects which are still in the initial design phase. Under this program school administrators can request, through local or State civil defense offices, the services of a qualified fallout shelter analyst or instructor to advise on methods for creating fallout protected space in school buildings. The advice is provided without charge to a local architectural or consulting engineering firm engaged by the local school district.

SHELTER TECHNIQUES

STRUCTURE	A  CONVENTIONAL (No emphasis on protection)	B  SLANTED (Maximize protection at no increase in cost)	C  SLANTED (Maximize protection with nominal cost increase)
COST	\$ 500,000	\$ 500,000	\$ 510,000 + -
PF	250 Spaces @ PF 10 250 Spaces @ PF 25	325 Spaces @ PF 40 250 Spaces @ PF 20	625 Spaces @ PF 40 or More
CONSTRUCTION	Large Window Area Hollow Block Walls Entrances Directly Off Corridors Panel Walls Lightweight Partitions Lightweight Roof Construction	Increase Sill Height Offset Entrances Stagger Doors & Windows Masonry Partitions Smaller Window Areas	All Slanting Techniques Fill Hollow Blocks w/ Sand Screen Walls Roof Fill Planter Boxes Roof Overhangs Increase Wall Mass Precast Roofs Depress Building Shields for Openings

Figure 4

The program does not provide design services but only guidance and advice on how to achieve fallout protection through the firm's own design effort.

It is obvious that, in building for tomorrow, we do possess the capability to provide protection, and we can do it without sacrificing any other desirable quality in our schools. How critical is the present need in terms of numbers of children to be protected?

The NEA study of public schools previously cited found that there were in 1965 only a few more than 9 million spaces of all kinds (a "space" is a shelter accommodation for one person) for sheltering 41 million pupils and 2½ million school employees. Many of these spaces are intended for shelter from one type of disaster but would not be adequate for others. Literally millions of them are not stocked with food, water, and medical supplies. Roughly, four-fifths of our school population has no shelter protection whatever.

Add to this situation the fact that in 99 percent of the school districts of the nation the new buildings authorized or under way in the spring of 1965 provided NO additional shelter spaces, and the need for a well planned "building for tomorrow" becomes dramatically evident.

DEVELOPING A SHELTER SYSTEM

A nationwide survey to locate potential public fallout shelter space in existing structures was started in September 1961 under the direction of the Office of Civil Defense. By March of 1966, space for more than 144 million people had been located. The program is a continuing one, and the objective is to find sufficient spaces to accommodate the total population of the country wherever it may be. The project is called *The National Fallout Shelter Survey*.

Buildings which qualify according to certain criteria are licensed as public (fallout) shelters. The criteria are these:

1. The shelter must have a protection factor of 40 or more.
2. It must accommodate at least 50 people.
3. There must be at least 10 square feet of floor space per person, with adequate ventilation.
4. The owner of the property must agree to permit public access to the shelter in event of emergency. (There is also provision for inspection of shelter supplies stocked by the Federal Government.)

Licensed shelters are marked with the black and yellow shelter signs and are eligible to be stocked with food, medical, and other emergency supplies, furnished free of charge by the Federal Government.

Fallout shelter identified in existing buildings is not always distributed in relation to where people live, learn, and work. The downtown areas of many cities have adequate shelter in the big buildings, to accommodate great numbers of people, in some cases even more than needed for the large masses of people employed there. However, other fallout shelter is needed during non-working hours for many of these same people who commute to residential areas. Obvi-

ously, we cannot control the time at which a disaster will strike. We must maintain the best possible state of readiness around the clock every day.

Many of the suburban areas surrounding the great cities are seriously lacking in fallout shelter space. In many rural areas, distances from community or public shelters create a need for protection at home.

The mobility of our population, with millions of people commuting to and from work and with children massed in one location during the school day and dispersed in their homes at other times, creates a need for many more shelter spaces than the total number of the population. The person who works or attends school at X and lives at Y some distance away requires protection in both places.

Not only is a need for more shelter *spaces* evident, but it follows logically that some planned order of shelter *use* is needed. The individual must know where *he* should go should emergency arise, lest some shelters become too crowded and others empty.

THE COMMUNITY SHELTER PLANNING PROGRAM

With millions of shelter spaces available and still more millions of people to provide for, the Community Shelter Plan—developed at Federal level—came into being. Its purpose is to make maximum, optimum use of the shelter facilities of the community, and to plan for the creation of additional shelters where needed.

Under the direction of the professional urban planners in the local government, specific shelters are allocated by blocks or areas. Distance, travel time, shelter space availability by location, population concentrations, and routes of movement are factors in making the allocations.

Licensing and stocking of qualified fallout shelters in more school buildings, especially in heavily populated areas, may help to relieve the night-and-weekend space problem. A community plan would identify the areas of this need. The school could still provide shelter for the children during the school day and, depending on its location, might be easily accessible to many adults and even to some of its own pupils at night and during weekends and vacations.

If a community has its community shelter plan in being, this will provide the school administrator information upon which to make important decisions.

Some disparity in thinking was evident in the response to the NEA survey questionnaire. One item in point was that of administrative procedure upon receipt of a warning of impending fallout from a nuclear explosion.

School systems with good shelter available and a good disaster program will retain pupils in shelters, knowing that the protection there is far better than the pupils would have at home. Some schools keep on record requests from individual parents stating that children should be sent home in an emergency and designating a neighbor's home as the child's destination in the event neither parent would be home. The (written) expressed wishes of parents in the matter are usually honored. However, when the arrival of radioactive fallout

is known to be imminent, or already started, the school must retain its pupils, knowing that whatever the PF of the school building, the protection provided is better than none.

The one course that can have no justification in view of the basic responsibility of the school for the safety of the child is to ignore the importance of advance planning.

The fact remains that certain information is necessary to permit the school to do its full part in serving the community. The school's primary responsibility lies with the child—to provide for the child's safety under all circumstances when he is under school control. The basic action in protecting him against disaster is to provide a safe place for him—a shelter—which he can reach quickly in an emergency. This may be in the school building or across the street in a large structure nearby.

In addition to this, the school plant *is* community property. Is its shelter needed for children and adults when school is not in session? Would its designation as a public shelter be detrimental to its pupils' safety in a school day emergency? When all pertinent needs and resources of the community are identified to serve as the basis for a coordinated plan for optimum shelter use, the emergent product is a *community shelter plan*.

The community is the basic planning unit of the entire civil defense structure. It is autonomous except that it is eligible for assistance and material help from the civil defense agencies of other levels of government. It must plan for temporary self-sufficiency in case of nuclear attack, when all outdoor movement may be halted during the period of radiological hazard.

With the community plan clearly delineated before him, the school administrator can develop his school plan to fit into it. A word of caution is indicated. In the absence or delay of enactment of a community shelter plan the schoolman cannot in conscience procrastinate, rationalizing inactivity by the lack of a community plan. Many schools have gone ahead without such plans over the past years and have developed excellent civil defense programs, including emergency plans for all kinds of disasters, natural and manmade. Another, and a very important, consideration comes to mind: a potential enemy, a tornado, an earthquake, a flood—all have one thing in common—they have no need to await another's plans.

WARNING AND COMMUNICATIONS SYSTEMS

It is possible that the first warning any large number of people would get of enemy attack would be the flash of light of the nuclear explosion. However, existing detection and warning systems might well, and probably would, give some advance warning of an attack, especially in the case of approaching inter-continental ballistic missiles. Such warning, however, would not be sufficient for movement of large masses of people out of threatened areas, nor could the actual pinpointing of missile hits be predicted. Further, a mass movement would probably result in great numbers of people being left without protection from the

radioactive fallout which would follow the nuclear explosions. The immediate objective, then, is to get people into shelter.

No potential enemy has the capability of delivering nuclear missile *blasts* which would cover the total land area of the United States. The blast areas would constitute only a small fraction of the land area of the nation. The warning task of civil defense, then, would include alerting all parts of the country to the impending nuclear explosions and the radioactive fallout associated with them. The fallout would cover a much greater proportion of the country than blast or heat.

The present Civil Defense Warning System is a combination of Federal, State, and local systems. The Federal portion of the system is termed the National Warning System (NAWAS). It is essentially an extension of the military warning and detection systems. NAWAS Warning Centers, plus back-up centers at the OCD regional headquarters, spread the warning by a special voice communications system to warning points throughout the nation. The latter transmit the warning information to local authorities who are responsible for sounding public warning devices such as sirens.

The action to be taken by school officials and the general public upon receipt of a warning will be in accordance with local civil defense plans. The former CONELRAD system has been replaced by the EMERGENCY BROADCAST SYSTEM (EBS), the latter operating through the normal broadcasting channels, with many of the regular AM broadcasting stations participating.

The Emergency Voice of the School

In general, the school administrator faces the possibility of two kinds of major emergencies: those, natural or manmade, requiring that pupils be moved to areas of maximum protection from conditions which prevail outside of the school building, and those in which the pupils must be moved out of the building, away from a hazard within, as fire. Obviously the school's internal warning system must be discrete, and there also must be distinctive, recognizable signals for each choice of action. The course of emergency action to be taken must be perfectly clear to all.

The point is, of course, that, in receipt of official warning of the emergency condition, the school administrator should have a method of warning the population in each school—a *method which indicates the specific emergency procedure to be followed*.

Some school systems receive warning by a bell and light system (a combination of bell signals and flashing colored lights which is equipment installed by telephone companies). Some have inter-school communication by telephone lines from a district switchboard. Some school buildings have an intercom system, connected with all classrooms and all other areas in the building. This has a distinct advantage in permitting the administrator to give explicit orders, and to modify an order in accord with any subsequent change of conditions.

IN THE SHELTER

The school shelters should have two-way communication with the school's control and information center. This center may be in the shelter of the school system central office. The latter shelter should have direct communication with the community civil defense headquarters. The school shelters, especially if they are licensed community shelters, should be connected (as above, or directly) with the community's civil defense emergency operation center.

Each shelter should have a radio, preferably a two-way radio which can be operated independently of the public utility electrical supply. Many shelters are equipped today with telephone jacks, and appropriate instruments are kept available.

It is presumed that in areas of fallout but no blast effects, the telephone facilities would remain operable. Special civil defense communication circuits would be restricted to official calls. Such an emergency circuit may be designated to connect the office of the school administrator with the local civil defense office and/or the emergency operating center (EOC).

"Turn on the Lights"

There is an unpleasant and possibly frightening effect from being left in total darkness, and an opposite effect when lights are turned on. Also, in many shelter areas in school (and other) buildings and in their approaches, there is no daylight. This can make movement and control of personnel difficult.

Although public utilities may continue operating during an emergency, it is highly desirable to have an auxiliary source of electrical supply. Those institutions which had been a source during the blackout of November 1965 in the northeastern United States, especially hospitals, were fortunate indeed.

"I'm Thirsty . . ."

Water is a basic necessity of life. Sometimes, even the knowledge that it is in short supply brings on a feeling of thirst. An independent water supply for emergency use is an excellent thing to have. Some school systems have had wells drilled and equipped with both electric pumps (with auxiliary generators) and emergency hand pumps.

Where such a system is not considered feasible, the water containers supplied by the Federal Government are an efficient means of storing water in advance of any emergency. Trapped water, normally found in hot-water tanks and pipes, is another water source. Appropriate valves for tapping it are desirable. (Caution: some boiler water contains anticorrosive chemicals which may be toxic. This should be determined before any emergency arises.)

". . . and Hungry"

In addition to the Government-furnished supplies stored in the licensed public shelters, many school systems have developed an emergency capacity in their regular food services. Extra quantities of food, especially canned goods, are

kept on hand and used on a rotation basis. This plan means only a modest, initial investment, with no spoilage as long as the necessary records are kept and properly used to assure rotation.

It is worthy of mention that food and water *are not contaminated by radiation* but by fallout particles. If any radioactive fallout particles should be on the food or on the container, they must be removed by cleaning, peeling, or removal of the container—and, of course, properly disposed of. Water can be filtered to remove radioactive particles.

It must be remembered that while there may be a considerable amount of food within the boundaries of the community in markets and warehouses, and a community emergency plan for officially authorized distribution of it, there may be a level of radiation for some time that would not permit anyone to leave shelter to obtain it. There is no protective clothing known that would permit the community service personnel to move about to aid or supply those in shelters. (The sometimes-cited plans to use messengers for communication would be similarly impractical.) The fallout shelter must be made self-sufficient for as long a time as occupancy may be necessary.

The supplies and equipment stocked by the Federal Government in licensed public shelters (free of charge) serve as an excellent example of the minimum needs of an occupied fallout shelter. They consist of: food and water—if needed—sanitation supplies, medical kits, and radiological monitoring equipment.

Obviously there are many other items that would make shelter occupancy less trying and more comfortable, such as clothing and bedding, eating utensils, tools, flashlights, extra batteries, infant-care supplies, civil defense instruction material, fire extinguishers, reading material, and other items that the imaginative administrator can name, and for which there is storage room. Battery powered radios would be especially important.

THE INTRA-SCHOOL-SYSTEM ORGANIZATION FOR CIVIL DEFENSE

We have presented many recommendations for providing a physical environment in which a sound civil defense emergency plan will operate effectively. Throughout the recommendations runs the theme of protection from the radiation emanating from fallout particles. (Examples of planned protection from radiation are the slanting techniques shown in figs. 5 and 6.) The suggested preparation has also included the stocking of equipment and supplies.

Remembering the great desirability of having the complete school civil defense plan officially approved by the board of education, there is also the well-founded axiom that the civil defense plan of the school must fit well into the community civil defense plan. *Cooperation* is the key word here. *There will be areas of common involvement such as emergency warning systems, school-community communication systems, distribution and planned movement of people, and other items of mutual interest and common action.* Involvement of the school system administration in community shelter planning is essential. Assuming that these

"SLANTING" TECHNIQUES

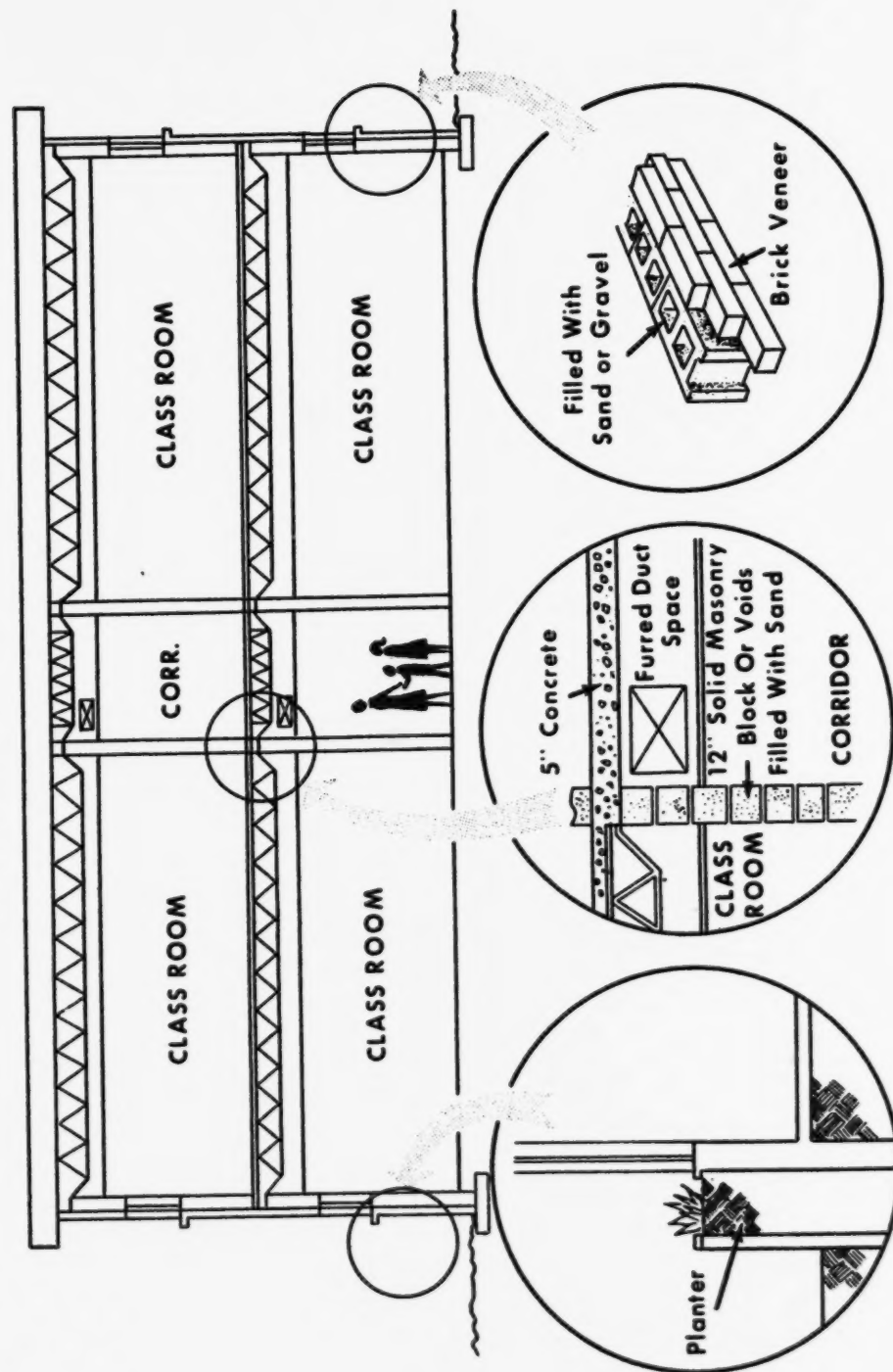


Figure 5

WHAT COULD BE DONE TO ENHANCE SHELTER?

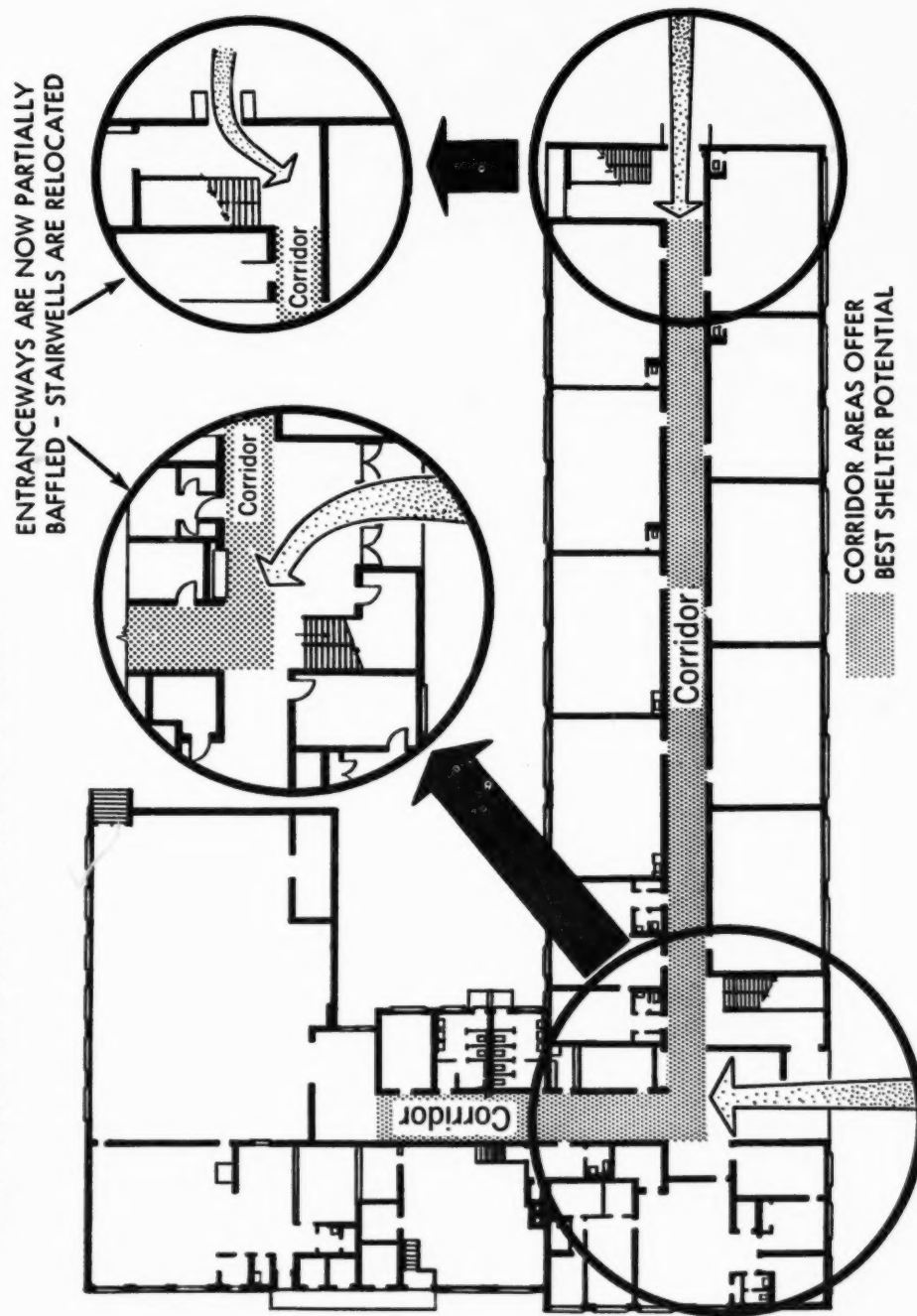


Figure 6

FIRST FLOOR PLAN - TYPICAL ELEMENTARY SCHOOL

coordinated aspects of the community shelter program are being observed by consultation and cooperation among the responsible community and school officials, organization of the total school population for emergency operation is in order. This organization is not complete until every individual—student, teacher, and non-professional school employee—can recognize each warning signal and knows what to do with pupil guidance appropriate to grade.

Staff Utilization

Every member of the school staff should have an emergency assignment. Key leadership assignments should be filled by resourceful, calm people of the leader type, regardless of rank in the school. Normal locations of individuals should, of course, be considered also.

The school system should have someone named as officially in charge of civil defense. In most cases the school administrator designates an individual (usually the *director* or *supervisor* of safety education) to be in overall charge of emergency planning, but retains command himself. There should be a chain-of-command understood by all, so that any emergency warning received, at any time, will be properly acted upon, regardless of the absence of any person or persons.

Each school should have an individual in charge of, and responsible for, civil defense activities. This person normally would be designated by and answerable to the principal.

Every separate shelter area should be assigned a school staff member who is trained in shelter management. This individual should be officially placed in charge of the shelter.

The civil defense plan should be described and discussed at staff meetings and included in appropriate school bulletins.

In-service Civil Defense Education of Staff

Patterned according to the size of the school district and its proximity to other districts and to pertinent nearby college course offerings, a program should be organized which will provide standard civil defense courses to school personnel.

The Civil Defense Adult Education course "Personal and Family Survival" is highly recommended as the basic course for all. For detailed information on this civil defense course, the administrator should contact the Civil Defense Coordinator in his State department of education. In addition to the adult education course, each staff member having a pertinent assignment should complete a course in Medical Self-help, Radiological Monitoring, or Shelter Management.

Instructor courses are available and a cadre of school-staff-member-instructors can be trained to conduct appropriate courses locally for other staff personnel. The center of civil defense education is now the Office of Civil Defense Staff College at Battle Creek, Mich. One university in each State offers courses, including instructor courses, and conducts conferences for State and local government officials. The school administrator who is interested in organizing CD

courses, or in advising his staff where such courses exist, should contact the local CD office for information. Where there is no local office, county or State office personnel should be consulted.

A survey conducted by the National Education Association found that some school districts offer incentives for staff members to take civil defense courses. The incentives include professional growth credit for salary advancement, payment of tuition and expenses for taking civil defense courses outside the community, and time granted during the regular school day to attend the courses.

Many school people have been agreeably surprised at the level of content and interest found in the contemporary civil defense courses.

THE SHELTER DRILL

It would be presumptuous to tell the school administrator how to move pupils from one place to another. Rather, some points specific to the shelter drill are offered for consideration:

1. A special warning device is recommended. At least, the signal to proceed to shelter must be clearly *distinguishable from other signals* (as for fire drill), and must be *known to students and staff*.
2. Students and staff know where to go—and how—regardless of when the warning signal comes. Fire and shelter drills should be held at various times—during class periods, while classes are passing, at lunch time, during activity periods, etc.
3. It is both psychologically sound and specifically informative to involve the school staff in planning drill procedures and other phases of the school civil defense program.
4. Some school superintendents have found it advantageous to require written reports from individual schools after each fire or shelter drill. This practice not only permits gathering information at a central point, but discourages forgetting or neglect and lets it be known that the central office is interested in, and believes in, the drills.
5. For the benefit of the less experienced teachers, it is well to let it be known before the first drill that patterns of student behavior are established chiefly in initial sessions. The first day in class, the first fire (or shelter) drill, the first game—each is critical. When close control is established at the beginning, relaxing formality to optimum control is easy. When control is lacking at first, it is difficult to establish later. Students should be well briefed in the seriousness and the true implications of the emergency drill.
6. While the normal shelter drill procedure is brief, we must remember that the in-shelter stay in an actual emergency may be somewhat prolonged. The austere living conditions and all the implications of disaster require an appropriately informed leadership *in each shelter area*. Health, feeding, communication, sanitation, radiological measurement, police and fire services, and other needs for survival require considerable pertinent knowledge. In shelter practice experience, even seemingly insignificant details, like a

method of distributing drinking water from the plastic inserts of the government-furnished water drums with minimum spillage, become important things to be learned. Gaining facility in the use of the radiological measurement instruments, the ratemeter and the dosimeter, requires instruction and practice.

While the many details of shelter operation need not be fully discussed here, the one important fact emerging from these thoughts is that *appropriately trained people are essential*. School staff members can obtain this training, and should do so in accordance with their individual CD assignments.

7. The subject of shelter emergence is important—when, how, for how long, and what then? Principles and guidelines covering this subject are taught in training courses, and specific guidance is given in an emergency through the Emergency Broadcasting System.
8. The school administrator will adapt drill procedures to his geographical area. Where flooding may be expected, pupils might be moved to higher levels, while such movement might not be indicated for some other type of disaster.
9. The old duck-and-cover position is not entirely obsolete. This position involves getting under desks, tables, or against a wall to gain added protection mainly from flying glass or debris. Seeing the flash of the fireball in the sky might be the first warning some have of a nuclear explosion. The initial, immediate response would be the classic duck-and-cover position. The same response would also be appropriate if a tornado or windstorm hits, and there is a possibility of flying glass and other debris in the vicinity of children.
10. Some administrators who attempted to develop a school-sponsored system of personal identification for pupils have abandoned the project for two reasons. First, it is less important now than in the days of the mass evacuation programs. Then, too, it usually proved quite impractical. Students continued to lose the identifying articles (even more than gym sneakers!) and, particularly in high schools, boys and girls found it quite romantic to exchange identification bracelets. Even our modern data storage and retrieval systems are incapable of overcoming this difficulty.
Too, the teacher in charge of a group in a shelter drill has the same responsibility as in a fire drill. All students should be accounted for at all times. The individual does not wander.
11. In many school systems, staff meetings are scheduled at regular intervals throughout the school year, with the programs often numbered and tailored to fit a calendar-oriented schedule. Some of these meetings could well be devoted to post-drill critiques. Much detailed information can be learned, recorded, and used, and the same psychological value be attained as in having the staff participate in the planning stage.

Using the reports of the staff meeting critiques in conjunction with their own observations, the key individuals responsible for the various phases and locations of the disaster drill can be convened at the direction of the school administrator. Past performance can be evaluated to make such improvements in plans and procedures as may appear desirable on the basis of experience. This might well include all phases of the school civil defense program, as well as the shelter drill.

People

Selection of staff members for specific assignments should be made with consideration of the whole person, *including the emotional characteristics*. The outstanding genius (and educator) on the staff may be hyperemotional and completely unfit for emergency responsibilities. Similarly, some people who are capable of brilliant abstract thinking are quite helpless in such simple, mechanical operations as moving equipment, planning group feeding procedures, etc. There is no either-or implication here. It is just that each assignment should be made after careful consideration of the individual's characteristics, abilities, and limitations.

CIVIL DEFENSE IN THE CURRICULUM

Over the years the curriculum of the American school has grown tremendously, as we all know, and most people applaud the growth as a necessary enrichment. But the school day has not grown in proportion, and the greatly enlarged content of education permeates all grades. A result is that many school people actively *fear* encroachment by any new school subject matter. Any *addition* seems to threaten their time allotment. Thus, the introduction of anything *new* tends to be met with immediate opposition.

In the case of civil defense subject matter, here are some cogent points:

1. Most of the material is not "new" to a curriculum designed for this age. It is simply being given fresh illumination.
2. Relating this area of science to the student's own life and future supplies an emotional, self-involving kind of motivation that enhances the "teachability" of these contemporary problems of living in the nuclear age.
3. It is neither necessary, nor recommended, that all civil-defense-oriented subject matter be organized into new CD courses to be included in the student's schedule. Much of this material should be handled in curriculum coordination: Medical Self-help is organized as a unit in health education; Nature and Effects of Radiation, perhaps, in a required general science class (rather than in an elective physics course missed by most students, who will nevertheless live in this nuclear age); courses in government should include the Federal, State, and local government's responsibilities for civil defense.

Much of this material is appropriately included as *units* within existing courses. For some material already being taught, a *reference* to its civil defense implications would make it more meaningful to the student.

Fundamental Civil-Defense-Related Subject Matter

The following areas of information are suggested:

- Nature and structure of the atom.
- Significance of nuclear energy as a source of power.
- Nature of nuclear detonation: heat and light, blast, radiation.
- Nature of fallout.
- Nature and effects of radiation.
- Limitations of nuclear weapons.
- Shielding from fallout radiation.
- Shielding properties of materials.
- Peacetime uses of nuclear energy in industry.
- Uses of radioactive materials in medicine and other sciences.
- Effects of weapons on property.
- Effects of weapons on the human body.
- First-aid practices.
- Elementary meteorology.
- Home nursing.
- Protection of the community water supply.
- Fire prevention and the chemistry of fire extinguishing.
- Food and water supplies for emergency use.
- Decontamination of materials affected by fallout.
- Living without modern conveniences: food preparation, sanitation.
- Social and governmental relationships and civil defense: international, national, State, and local.

Placement of the material within the curriculum is a matter for school district decision. It is suggested that not all of the material be withheld for the upper few grades. Elementary grade pupils will be taking part in drills, and, in some areas, in disaster activities (though we fervently hope not those of nuclear war). Information appropriate to grade level is desirable for all.

THE PARENT IS A POTENTIAL ALLY

One common characteristic possessed by the overwhelming majority of parents is a strong desire to protect their children. The best method of gaining parental support for anything the school does is to show parents that it is good for their children.

The PTA, the school paper, the community news media, and the local service clubs are all potential channels for spreading today's sound, well documented rationale for civil defense in the school.

In the NEA survey, some school administrators pointed to the widely known fact that parents tend to read, and often to learn from, school materials taken home by children. Members of the professional school staff who are well informed in civil defense *and those teachers who teach civil-defense-related subject matter* have excellent opportunity to give exceedingly valuable knowledge to the adults of the community, while primarily teaching their students.

CIVIL DEFENSE IN THE SCHOOL CURRICULUM

(From NEA Study, 1965)

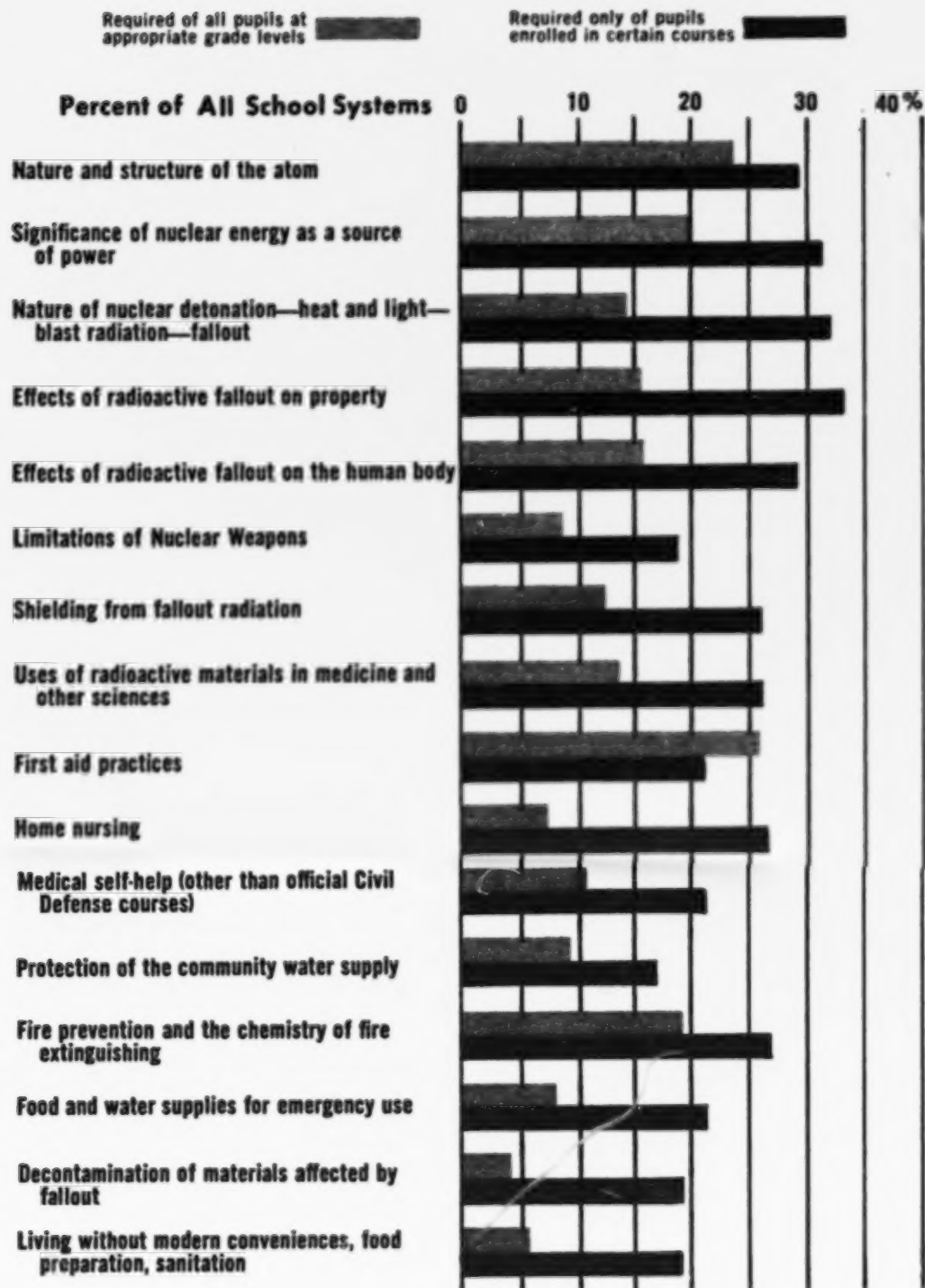


Figure 7

Many parents know that today's students at all levels are acquiring knowledge not available in the parents' youth. This fact and a natural interest in their children's lives combine to cause many parents to examine materials their children bring home from school.

There is a great advantage in assuring the parents that their children will have the maximum protection possible in event of any disaster, natural or manmade. Also it is important that the school without any reasonable shelter potential have an understanding with each parent as to where to send the child *when there is sufficient warning time* and the parents are not at home. Also, there are conditions under which parents should know enough not to rush to school, and other less common emergency circumstances under which the school can accommodate parents along with their children. The parent should be informed, in any case.

CIVIL DEFENSE ADULT EDUCATION

The standard *Civil Defense Adult Education* course "Personal and Family Survival" has been mentioned. With the cooperation of school administrators more than one million people have completed this course and 48,000 teachers have completed a course which qualifies them as instructors in this program.

Instructors are prepared by the State department of education civil defense staff under the direction of the chief State school officer. They are paid for teaching the course by the State from Federal Government funds. Many school systems throughout the country offer the adult course as a community service. In some systems it is offered to secondary school students, usually as an elective course taught by regular staff members who have been prepared as instructors.

The Civil Defense Adult Education Program also provides the opportunity for selected adults to take special training to qualify as radiological monitors. In addition to its value to those who enroll, the Civil Defense Adult Education Program serves as an excellent source of community support for civil defense, ~~including the school program.~~ The alert school administrator will investigate the advisability of instituting this course in his community.

THE SCHOOL AS A COMMUNITY AGENCY

The primary responsibility of the school has long been recognized as that of educating the child. Schoolmen know that the school, as an agency of the community, possesses facilities for additional services also. Where such services do not conflict with its primary mission, the school has the responsibility of constructively serving its legal owners, the citizens of the community.

The common use of the school auditorium for community evening events recognizes this principle. Also, there have been many instances in which school facilities were used for temporarily sheltering, feeding, and otherwise serving victims of disasters affecting the community, or nearby communities.

The role of the school in civil defense has herein been identified mainly with protection of its own school population—pupils and staff.

Many school systems have permitted school buildings to be licensed, marked,

and stocked as public shelters. Some of them have more spaces than needed for pupils, and all may serve the community during the hours and days in which school is not in session.

The well-organized shelter plan includes provisions for preparation for disaster, for the duration of the disaster, and for the period following emergence from shelters. Much of the detail of the latter two phases is very well covered in the standard civil defense courses on Shelter Management, Radiological Monitoring, Personal and Family Survival, and Medical Self-help.

Following the actual shelter period there may be some special uses for school facilities in the period of rehabilitation of the community. The one simple concept that would govern here as it has in so many past emergencies is that the school is part of the community. Its civil defense function is part of the total community program.

" . . . their appointed rounds"

The familiar phrase expresses the philosophy which underlies the organization for Civil Defense. Most citizens normally expect that Government at Federal and State levels will continue to function whatever disaster may befall. Less understood is the pattern of planned continuity of local community government which is explicit in up-to-date civil defense planning.

Community Civil Defense is an integral part of the organization and functions of local government. The *director, office, and/or department* is part of that government. It is the agency charged with responsibility for planning and organizing the machinery of, as well as furnishing staff direction for, emergency operations under disaster conditions.

Under extreme conditions, there is urgent need for special services on the part of fire, police, hospital, and other agencies. Rather than suspension of local government, the need for it becomes infinitely greater than normally. Too, local self-dependence becomes infinitely more critical since the advent of nuclear weapons, when radioactive fallout may temporarily immobilize forces and resources which could formerly bring almost immediate relief to any stricken area. The total community unit has become a basic building block of the American civil defense structure.

Within that unit are diverse components of services, shelters, agencies, and the *school*. The school administrator recognizes two responsibilities—distinct yet intertwined. Primarily, he must protect his pupils. At the same time, as a responsible official serving a community agency, he makes certain that school facilities give maximum service in time of need to the people of the community to whom they truly belong.

Whether the disaster be natural or devised by man, there is no doubt about the devotion of school people to our "Ship of State"—and not the slightest intention to abandon ship!

BIBLIOGRAPHY

National Commission on Safety Education, National Education Association, 1201 16th Street NW., Washington, D.C., 20036

1. *Checklist of Safety Education in Your School*, 1963.
2. *Current Status of Civil Defense in Schools, With Guidelines for Action*, MP-35.

Office of Civil Defense

4. *New Buildings With Fallout Protection*, TR 27—January 1965.
5. *Personal and Family Survival*, SM 3-11 (Revised).
6. *School Boards Plan for Civil Defense*, MP-31—August 1965.
7. *Schools Built With Fallout Shelters*, TR-33—February 1966.
8. *Publications Index*, MP-20, latest edition.

The best procedure for obtaining the publications of the Office of Civil Defense is to contact the local Director of Civil Defense. Where there is no local CD office, request should be made of the County or State CD Director.

Titles, sources, and availability of OCD publications are cited in *Publications Index* listed above.

U.S. Government Printing Office, Washington, D.C., 20401

9. *Hurricane Carla*, 1962. Price: 55 cents.

Distribution:

OCD Regions and Staff College,
State and local CD Directors,
Contract Universities,

CD University Extension Program,
Chief State School Officers,
State CD Adult Education Coordinators.

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS
and
NATIONAL COMMISSION ON SAFETY EDUCATION
of the
NATIONAL EDUCATION ASSOCIATION
in cooperation with
OFFICE OF CIVIL DEFENSE
DEPARTMENT OF DEFENSE